

5E Series C/H/N Elemental Analyzer

Models Available

- © 5E-CHN2200 to test Carbon, Hydrogen, Nitrogen content
- © 5E-CH2200 to test Carbon, Hydrogen content
- © 5E-TCN2200 to test Nitrogen/Protein content
- © 5E-IRH2200 to test Hydrogen content

Standard Configuration

Computer
Main analyzer
Furnace reagent
High purity copper
N-Catalyst
H₂O sorb reagent
Standard Reference Materials (GBW)

CO₂ sorb reagent
Silica wool
Lower Crucibles
Upper Crucible
O-ring kit
Tool kit

Optional Configuration

AR427 com-aid for liquid sample
Additional 2-4 layers carousels
4cm×4cm size tin-foil cup
Bigger size hole carousel



Up to 140 samples
Stackable auto loader
to 4 layers

Application

5E Series C/H/N Elemental Analyzer is used to determine carbon, hydrogen, nitrogen/protein content in solid and liquid material, such as coal, coke, oil, petroleum, biomass, fertilizer, plastic, food, hydrocarbons, plant tissue, leaves and tobacco, which is widely applied in power plants, coal mines, metallurgy, chemical industry, commercial inspection, scientific research, food industry, education etc.

Features

Maximum Efficiency

1. High throughput: standard auto loader for 35 samples per layer, stackable to 4 layers available.
2. Dual-stage furnace system with pure oxygen flow to ensure the complete combustion of all samples.

Good Environment Adaptability

1. Optimum gas circuit provides good gas tightness of the system.
2. O-ring free from heat resource.

Minimum Consumption

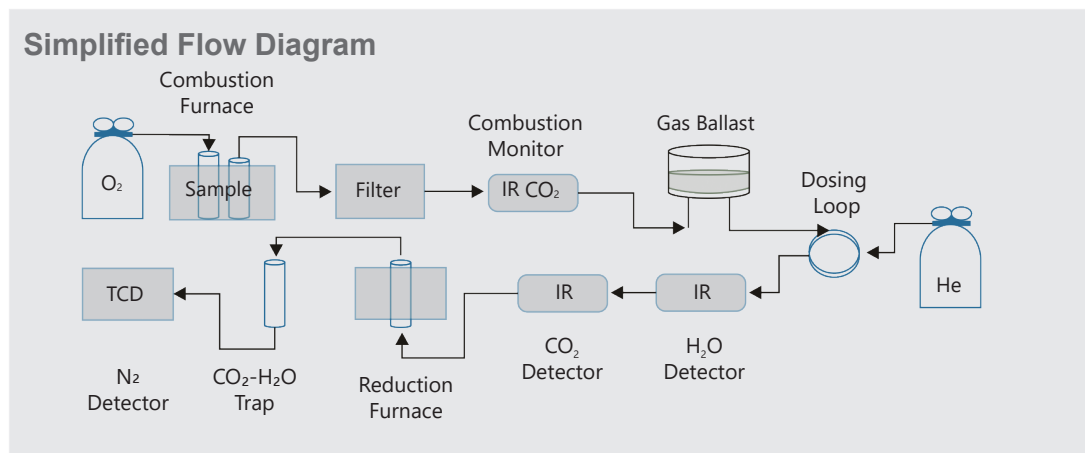
1. Independent detectors to determine C, H, N respectively (IR for C, H, TCD for N). Analysis of CH mode and CHN mode can be chosen on software. (For 5E-CHN2200)
2. Saving time, gas and reagent: only 5.5ml blended gas needed to be analyzed.

Unattended Operation

The operator is limited to just adding sample to auto sample loader. Then the instrument will finish the test, cool down and shut off automatically.

Working Principle

An encapsulated sample is placed into the loading head of the CHN2200, which is sealed and purged. The sample is then dropped into a hot furnace which contains high pressure pure oxygen, for very rapid combustion. Dust and ash are filtered before collection in the gas ballast. These collected gases are mixed, and then an aliquot dose is analyzed with IR detectors to give Hydrogen and Carbon value. All the gases pass through a reduction catalyst in order to form molecular nitrogen. Then CO₂ and H₂O trap ensure that only N₂ goes inside the TCD to be detected. The system is controlled by external PC using Windows based operating software.



Custom Configuration, Maximum Flexibility

	Carbon-IR	Hydrogen-IR	Nitrogen-TCD
CHN	✓	✓	✓
CH	✓	✓	
CN	✓		✓
H		✓	

Intelligent Software System

The screenshot displays the software interface for the 5E-CHN2200. The main window shows a table of calibration standards and a 'Calibration' dialog box. The calibration dialog includes a graph of the calibration curve and a table of calibration parameters.

No.	Name	Weight(g)	Cd(%)	Hd(%)	Nd(%)	Methods
1	blank	0.0800	0	0.03	0	cc
2	blank	0.0800	0	0.01	0	cc
3	EDTA	0.0172	40.74	5.27	9.50	cc
4	EDTA	0.0340	41.23	5.67	9.64	cc
5	EDTA	0.0452	41.02	5.54	9.61	cc
6	EDTA	0.0593	41.00	5.47	9.56	cc
7	EDTA	0.0752	40.88	5.51	9.54	cc
8	EDTA	0.0911	40.92	5.43	9.58	cc
9	EDTA	0.1037	41.02	5.58	9.51	cc
10	EDTA	0.1199	40.94	5.51	9.59	cc
11	EDTA	0.1343	41.08	5.51	9.61	cc
12	EDTA	0.1516	40.94	5.51	9.55	cc
13	EDTA	0.0841	40.91	5.51	9.58	cc
14	EDTA	0.0824	41.05	5.51	9.56	cc
15	PHENYLALANI...	0.0818	65.44	6.72	8.46	cc
16	PHENYLALANI...	0.0757	64.93	6.78	8.40	cc
17	PHENYLALANI...	0.0790	65.32	6.73	8.43	cc
18	PHENYLALANI...	0.0796	65.03	6.67	8.46	cc
19	PHENYLALANI...	0.0792	65.24	6.79	8.43	cc

The 'Calibration' dialog box shows the following parameters:

- Element: Carbon
- Types: Cubic
- Current Coef.: 1.965e-006
- Cubic: -8.333e-005
- Quadratic: 1.001e+000
- Linear: -6.441e-003
- Intercept: 0.0455
- SSE: 0.0455

Below the calibration dialog, three chromatograms are shown:

- C:** Carbon chromatogram showing a peak at approximately 7.5 minutes.
- H:** Hydrogen chromatogram showing a peak at approximately 7.5 minutes.
- N:** Nitrogen chromatogram showing a peak at approximately 10.5 minutes.

Specification

Model	5E-CHN2200		
Conforms to Method	AS 1038.6.4, ASTM D5373, ASTM D5291, ISO 16634, ISO 16948, ISO 29541, EN 15407, EN ISO 16948:2015-0, GB/T 30728, GB/T 30733, UNI 15104, UNI CEN/TS 15407		
Analysis Time	7mins, depending on sample combustion conditions		
Sample Loader	Stackable auto loader, up to 140 samples by 4 layers		
Repeatability	Carbon(C _{ad})≤0.5%, Hydrogen(H _{ad})≤0.15%, Nitrogen(N _{ad})≤ 0.08%		
Sample Mass	Up to 1000mg, depending on sample matrix		
Temp. Resolution	1°C		
Gas Required*	Helium, 99.99%, 0.25 ± 0.01 Mpa		
	Oxygen, 99.99%, 0.25 ± 0.01 Mpa*		
	Nitrogen or compressed air, 0.25 ± 0.01 Mpa		
Measurement Range	Carbon: 0.02mg-150mg	Hydrogen: 0.1mg-12mg	Nitrogen: 0.04mg-50mg
Furnace Type	Resistance furnace (main furnace and furnace rear), max. temp 1050 °C		
Power Supply	Single phase, AC220 ± 10% , 50/60Hz, 5.5kW		
Net Weight	110kg		
Dimensions(L×W×H)	690mm×750mm×720mm		

*Test Condition:
If N≤0.8%, 99.999% high purity oxygen is required.